



The Gleaner.

Vol. V.

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SPRING

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The Gleaner

Vol. V.

NATIONAL FARM SCHOOL, JUNE, 1905

No. 5

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LOUIS ROCK, '07 - - - - *Class and Club*
JACOB RATNER, '05 - - - - *School Notes*
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EDITORIALS



The graduating class did not take advantage of the June number of THE GLEANER to publish their respective class day exercises, as was customary, but a more practical number is issued, namely, these of graduates and several agricultural articles. During the current year more agricultural articles have been submitted than in previous years. This, however, was not a bad idea, for we have tried both sentimental stories and articles on different subjects, and we saw that the students were not proficient in that line. However that may be, it is no more than proper for agricultural students to write more on their respective subjects. In view of all this we have gathered together some of the these and other articles for the following pages.

"Gleaner" Election

On May 7 Associate Editor Condor called a meeting of THE GLEANER Association to elect a GLEANER Staff. The following were elected: Editor-in-Chief, Louis Condor, '06; Associate Editor, Bernhard Ostrolenk, '06; Hit or Miss, The Boys; Class, Club and School Notes, Victor Anderson, '07; Athletics, Abe Miller, '07; Exchange, Meyer Green, '07; Business Manager, Chas. Horn, '06; Assistant Business Managers, Samuel Galblum, '08 and Harry

Frank, '07; Auditing Committee, Henry Ratner, '06 and Bernhard Ostrolenk.

At a recent meeting of THE GLEANER Staff it was decided to combine the departments Class and Club and School Notes under one department, namely: Class, Club and School Notes. The reason for this change was, that the editor of Class and Club had great difficulty in gathering material for his department each month. His notes were generally limited to happenings of the respective classes, etc., which was not enough, and he was always in danger of interfering with school notes, which was included under a different department.

Another innovation was also introduced, "The Boys" who had become eligible by editing the department, Hit or Miss in the previous April and May numbers of THE GLEANER were elected to fill the office of editor of Hit or Miss.

The prize of one dollar which was offered by the Business Department to the student who contributed most for the boys' column, was awarded to Chas. Horn, '06.

Senior Banquet

It has always been the custom of the Junior classes of the National Farm School to honor the Senior Class, upon their advent of leaving the school, with a banquet.

Last year this custom was dispensed with on account of the enmity that existed between the two classes. This action, on the part of the last year Juniors ('05) was hotly discussed at a recent meeting of the Junior Class ('06), and as to the advisability of continuing the old custom. However, they concluded to ignore the enmity between the two classes last year, and furthermore to institute a feeling of friendship among the graduating class, they decided to celebrate by giving them ('05) a banquet.

It was accordingly held at the '06 club rooms, and was pronounced a success by all who attended. A toast, "The Seniors" was given by Louis Condor, '06, and J. Ratner, '05, responded.

The banquet was concluded with a few violin selections by Chas. Horn, '06, and also a few vocal solos by Louis Condor, '06, accompanied on the violin by Chas. Horn, '06.

The Senior and Junior class yells were then given and the banquet came to an end.

Two Freshmen were discussing the day after hazing that they saw a ghost—Well, what did it say to you?

"How should I know, I am not skilled in dead languages."

The Openings for Our Graduates

The avenues open to graduates in agriculture increase in number and variety with each year. For a time the agricultural colleges and the experiment stations absorbed those who cared to enter the professional lines of agriculture, and the fertilizer trade was the main outlook of the agricultural chemists on the industrial side. In the course of time State boards and departments of agriculture added agricultural graduates to their forces, and the National Department of Agriculture, as it developed and differentiated, recruited its corps of workers quite largely from that source.

Gradually private enterprise began to employ such men, and the creamery industry now claims many operatives trained in the dairy school. Manufacturing establishments which stand in close relationship to agriculture find it advantageous to have men on their force who are experts in agricultural lines, and this advantage is especially noticeable in establishments which include among their products or by-products materials designed for spraying, feeding, fertilizing, and other agricultural uses. Railroads are coming to find use for such men, as are also large development enterprises of various sorts. The landscape gardener is in steady demand for city parks and private grounds, and the farm superintendent or manager of large estates who has had a college training is becoming more common every year and more sought for.

The usefulness of the economic entomologist in the practical walks of life was long ago recognized, not only as an investigator, but in the protection of trees and shrubs of parks and cities. Many municipalities now number such an officer, as they do also instructors in the elements of agriculture and in gardening in the public schools. Already a field appears to be opening up for the consulting agricultural expert in well-to-do communities to furnish expert advice on the laying out and management of estates, and similar matters.

The agricultural press has long recognized the advantages of agricultural training and now that the demand has grown upon it for more advanced and technical information, men who have studied the science as well as the art have become a practical necessity upon the editorial staff. The introduction of such men has raised the grade of the agricultural paper very materially. To better fit graduates for this work one agricultural college has established during the past year a course in agricultural journalism which appears to be a timely departure.

[EDITOR'S NOTE.—This article was taken from *The College Signal*, Massachusetts Agricultural College.]

The widespread development of popular interest in agricultural matters, in nature study, and in the country generally has opened up a considerable field to the agricultural writer outside the farm press. This field is being supplied in a way, but it were infinitely better if more of the popular writing on topics relating to agriculture were done by men of some technical training in that subject, who could more clearly see the bearing of things and more logically and truthfully interpret what they saw for the benefit of the trusting reader. This will probably come in time. There is surely an important place for the trained agricultural writer, both in popular and more technical lines.

The various branches of agriculture proper, such as general and special farming, stock raising, dairying, fruit growing, market gardening, floriculture, the nursery business, and the like, afford all the advantages to the educated man that they ever did, and men are going from the agricultural colleges to these industries in increasing numbers. The fact that their agricultural education makes them more intelligent, resourceful, and better farmers and more progressive men generally is no longer a matter of question. Their neighbors will watch them for suggestions and come to them for advice when something new turns up.

These are only a few of the lines of industry in which the agricultural graduates now find an active demand for their services. Other avenues will open up—are opening up every year, now that the meaning of an agricultural education is becoming understood. Already it appeals to a large constituency. It touches the life and the industries of the people at so many points that new uses for men who have elected that course are bound to arise continually. There is always room for those who wish to engage in the business side of agriculture. There has been a restricted field for specialists who desired to follow it professionally. To a large body of young men who do not care to enter either field, the diploma of the agricultural college is now a passport to remunerative employment in a large number of lines.

An Advice—Never marry a girl named Ann.
“Ann” is an indefinite article.

Some people think there is no end to a woman's tongue.

No farmer can plow a field by turning it over in his own mind.

The Production of Sanitary Milk

The consumption of milk in this country is constantly increasing, thereby making the milk industry a very important one, which is due to the large demand of the people for milk and its products. It has been estimated that the milk produced by over five million cows are yearly consumed as milk in the United States. This industry has become a most important one, as is shown by the fact that physicians in different States have experimented diligently in trying to find some means by which the milk product could be prevented from acting as a medium in distributing contagious diseases, such as tuberculosis, typhoid fever and a few others. That milk does distribute such diseases has been proven time and again, when they have been traced to their source, which in many cases proved to be the farm from whence the milk was shipped.

Many families are regarding milk as a necessity, and are consuming it in large quantities, especially the children to whom milk is very agreeable.

It has been found by analyzing the different food products, that a quart or two pounds of milk contains as much nutriment or food which may be digested in the human system as about three-quarters of a pound of beef. Six ounces of bread will also contain the same amount of nourishment. The price of the nutriment in beef being much higher than that of the same nutriment in milk, which could therefore be used to replace a large quantity of beef and other high-priced products. But this is not recognized by very many consumers of milk, who use it more as a luxury rather than as a life sustainer. In combination with other food-stuffs milk will greatly increase its value at a very small cost.

There are very minute organisms in existence which live and multiply very rapidly wherever they can find means favorable for their growth. These organisms are very small, in fact too small to be seen with the naked eye. They are to be found everywhere, in the air, in food products, on animals, and especially in places where filth is in abundance. The changes which certain products undergo, such as souring of milk, rotting of manure, are all due to the action of these small microorganisms, which are commonly known as bacteria. There are over two hundred different kinds of these bacteria, attacking the various products, some causing the same change, while others producing an entirely different effect. Most of these bacteria do not cause any change under a very low temperature, they are simply existing and do not multiply themselves. Thus a low temperature will prevent these bacteria

from producing any change, but as the temperature increases, they become more active, and when they reach the temperature that is most favorable for their growth, they multiply very rapidly. A single bacterium may have a million descendants within a very short time under favorable conditions. A single drop of milk may contain from a few thousands to many millions of these bacteria. Now all of the bacteria are not by any means harmful; in fact, they do more good than harm. The harmful bacteria are those that we want to exterminate. Some of the bacteria are harmful in one place while beneficial in another, such as the lactic acid bacteria which sours milk and cream. These are undesirable when present in milk for the city market, but are highly necessary when ripening cream for churning. These ferments also develop the flavor.

It is through the action of these bacteria that plants grow. These minute organisms convert the elements in the soil to such a condition that they are able to take it up and were it not for these bacteria this wonderful change would never happen.

The dairyman should try as much as possible to keep these harmful bacteria out of the milk. If he can accomplish that his milk will keep much longer, in fact, it will keep indefinitely if all the bacteria can be expelled, but that is practically impossible, because wherever he turns, in the stable, on the cows, in the dairy, on the utensils, the bacteria are present in large numbers, and the moment milk is present they find a most excellent place to live and multiply rapidly. The aim of every dairyman should be to check this rapid multiplication of bacteria. Disease germs also find an excellent place in milk to live, and if such germs are around the stable or dairy they may find their way into the milk, and then be carried to the city and cause an epidemic.

The keeping qualities of milk depend on the number of bacteria that get into the milk while being handled. Milk containing few bacteria will keep much longer than milk which is full of bacteria. The milk which is drawn from the cow is by no means free of bacteria and to obtain bacteria-free milk is almost impossible. It has been ascertained by experiments that quite a number of bacteria from the air get into the teat through its opening and there find an excellent place to multiply as there is always some milk left in the teat, no matter how dry a cow has been milked.

The man taking care of the cows can do a great deal in keeping bacteria away from them. He should go quietly about the cows and not make any unnecessary noise. If the attendant is in any way infested with a contagious disease, either by coming from a house where such disease is prevalent, or by being affected himself,

he should not be allowed to attend to the cows and kept out of the stable entirely until such disease has been exterminated.

Milk is yearly contaminated on account of an improper construction of the stable. Some farmers seem to think that a cow can be kept and do well in any place, and have consequently given very little attention to that end and have housed the cows in a dark corner of the stable where it was almost impossible to admit fresh air. Some farmers imagine that a cow does not need very much air, but that fault should be speedily remedied. The ventilation of the stable should receive careful attention and be perfected as much as possible, so that the air in it will be fresh all the time. This will aid greatly in keeping bacteria out of the stable, which should also be supplied with enough sunlight, which is one of the worst enemies of bacteria. The stable should be constructed so as not to allow any possible place for bacteria to breed. This can be accomplished by having the ceiling constructed tight, so that if any hay or straw be kept above it cannot drop any of its dust. The walls should be made of smooth boards and the floor of such material that will not absorb any liquid. Cement seems to be one of the best at the present time to use for that purpose. The stalls themselves should have as little wood to them as possible, the stanchion system which forms a collar around the animal's neck would be one of the best to use for that purpose. Each cow should be given enough room to lie down comfortably, without disturbing any of the other animals. The mangers should have the best possible number of corners to them and not be too high. The gutters should be made so inclined as to allow the liquid to drain off. After the proper kind of stable has been obtained with a good ventilating system, a proper supply of sunlight and other things, cleanliness is of the utmost importance to consider, for a well constructed stable kept dirty, is worse than a bad constructed one which is kept clean all the time. An extra good cleaning once a day over the whole barn and taking the droppings away from behind the cows a few times every day would be sufficient to keep the cows in a healthy condition. The stable should be whitewashed not less than twice a year. It should be given a thorough cleaning before whitewashing, and the whitewash put into every corner and crevice in the barn. The floor and mangers should be washed and cleaned at least once every week.

Most of the dirt and bacteria that is found in the milk immediately after milking comes from the cow. The animal is full of loose hair, dirt, and dust with numerous bacteria sticking to them, and great attention should therefore be given to the cow. First

she should be in a healthy condition, and if any one of the animals show any sign of sickness, should be immediately removed from the herd so as to prevent the spread of disease in case it is contagious. The herd should be inspected by a skillful veterinarian, at least once every year, and cows in an unhealthy condition should be attended to. No new cow ought to be added to the herd unless first examined as to her health. The cows have to be given a perfect cleaning once every day. This can be done with a curry-comb and stiff-haired brush. Sometimes the cows have to be washed which should also not be neglected. Just before milking, the hind portion of the cow should be wiped with a damp cloth, so as to prevent the fine hair and particles which may stick to the cow from falling into the milk. If that is not done lots of the dirt particles and hair will get into the milk with every move that the cow makes during milking time. Enough bedding should be under the cow to keep her from coming in contact with the bare floor. This should be clean and a good absorbent. Sawdust is very good to use, but its tendency to stick to the cow's hair makes it somewhat objectionable. Finely cut straw or shavings are very good to use. The cow should be kept away from muddy places when pasturing her. The barnyard should be graded so as not to allow water to collect in any part of it.

The cow ought not to be fed immediately before nor during the milking period, as the dust which is raised by handling the feed will get into the milk. Feed which is liable to impart a strong flavor to milk, such as turnips, should never be fed before nor during milking, but always after. No moldy feed should be given to the cows as it might impart a bad odor to the milk and endanger the animal's health.

A great source of milk contamination is the milker. He generally milks the cow with the same clothes on that he wore during the day's work and without washing his hands. A separate suit should be put on before milking and used for that purpose only. A white suit which can be washed is preferable for that purpose. A separate cap should also be worn during the milking. The hands should be washed and dried before milking and kept dry during the milking process. The first few drops of milk should not be put into the pail, but milked into the gutter as it might contain some bacteria. The milking should be done quietly and quickly and all the milk extracted from the udder.

The milk must be taken away from the barn as soon as possible. Dairymen sometimes neglect this point, and the first milk has to stay in the barn sometimes very long before all the cows are

milked. Meanwhile the bacteria in the warm milk are multiplying rapidly.

The milk-room or dairy should be so situated as not to allow any of the odors from the barn to enter it. It should always be kept perfectly clean and supplied with fresh air. The milk should be cooled just as soon as possible after milking and must never be sent to the city without being cooled. This cooling prevents the bacteria from increasing very rapidly, and it is almost impossible to keep the milk from souring without cooling it.

Before cooling the milk must be put through a good strainer, so as to extract all particles of dirt and hair from the milk. Some dairymen cool their milk by putting cans full of milk into cold water, others put it into ice water, but the above two methods are very slow processes, taking about two hours to cool a canful. A much better device which is used extensively by many dairymen is one into which a steady stream of cold water can be run through the inside, and the milk to be cooled is allowed to run on the outside. This is a quick method and at the same time the milk is aerated, that is, most of the milk is exposed to the pure atmosphere allowing the gases which gives to the milk objectionable odors to escape. The aeration of milk has been practiced quite extensively by using a separate device for that purpose exclusively, but by using the combined aerator and cooler it makes it more practical and economical. The milk in order to reach the city in good condition must be kept cool, and where such milk has to be shipped a long distance refrigerator cars have come into use. For these cars to do any good the milk must be cooled before putting it into such cars, as warm milk put into a refrigerator car will sour before getting cool.

An important factor in handling milk is the utensils used. These should be made so as not to have corners on them where bacteria might possibly attach themselves and start growing as soon as milk is put into them. The buckets should not have too wide an opening, as the wider the opening the more dust and dirt it will collect from the surrounding atmosphere during milking time. They must be kept perfectly clean. The best way to wash them is to first rinse them with cold water, then washed with hot water containing some alkali, then rinsed with boiling water and finally steamed with live steam. The last treatment will no doubt kill all the germs that may possibly withstand the boiling water.

Pasteurizing milk, a process which consists in heating the milk to a high degree of temperature for a certain length of time without developing a cooked flavor in the milk. This is done in order to kill all possible bacteria, especially disease germs that may have

found its way into the milk and also to improve the keeping qualities of the milk. This has been practised quite extensively before cooling the milk, but it has its disadvantage in reducing the digestibility of the milk.

The milk after it reaches the city must also be looked after carefully and kept in a cool temperature all the time.

Some milk is at present sold in sealed bottles, for which a higher price is paid. The milk in these bottles is supposed to have been produced under the most sanitary conditions practicable.

In order for the farmer to produce the best quality of milk, the Government should have reliable inspectors appointed whose duty it will be to inspect milk-farms, and if the conditions are not sanitary, the milk from that farm should be prohibited from being sold.

J. RATNER, '05.

I. Horn, '07, thinks a dead hen is better than a live one, as she will lay wherever you put her.

ROCK
GALBLUM
H. RATNER

KYSÉLA
CONDOR
KRINZMAN
J. RATNER
THE BOYS
MILLER
OSTROLENK

Dobrin, '09—What kind of breed is *pati de foie gras*?

In order for "Doc" Roose to be a veterinarian, he must possess horse-sense.

Some of the students are drinking yeast at night, to make them rise early in the morning.

Rock's philosophy—In carrying a can of milk from barn to dairy, the milk becomes heavier, as approaching the dairy.

Roose, '06, thinks prudent consumption is expensive tuberculosis.

Ornamenting the Home Grounds

INTRODUCTION

There is perhaps nothing that appeals to man more than a neat, comfortable dwelling, set off by trees, shrubs and flowering plants in harmony with its surroundings.

It has been said that the hope of America, is the homes of America; whatever adorns one's home ennobles his domestic life, strengthens his love for country, and nurtures the better elements of nature in him who is thrown in contact with such improvements. To promote a love for growing plants by cultivation and study, develops in human kind a love for the beautiful in nature, art, and character. It is a known fact that the love of nature sharpens the senses and quickens all the intellectual faculties. It is largely because of rambles through woods and exercise in small gardens, that children become healthy and aged people present the bloom and vigor of youth in later years. A home garden is a delight to everyone, even the passer-by may observe and feel inspired by the wonderful works of nature. The very atmosphere about such place seems to be permeated with animation, and healthfulness, and gives an impression of repose so that one feels as though life is other than a mere drudge.


The outward embellishment of a home, portrays to the passing person some idea as to the home-life of the family. A neat, well kept garden or lawn suggests industry and an appreciation of the works of nature. On the other hand, barren or unkempt grounds, clearly illustrate the lack of interest in the welfare of ourselves and of those about us.

How many people throw away opportunities to make themselves and children happy, and teach them how pleasant it is to work, by neglecting their laziness and shiftlessness, the making of a small garden where the child may dig, or perhaps plant some tree or shrub and cultivate it, and see how willingly it will respond to good and timely treatment. What is needed more than all else is popular education with respect to the beauty, adaptability and arrangements of the subjects of the vegetable kingdom for creating delightful gardens, and providing fine landscape effects. It should be better known that there are fully one thousand different species, and as many varieties of ornamental trees and shrubs, besides great numbers of hardy herbaceous and annual flowering plants, all possessing distinct features of beauty that will thrive in most any part of the United States. It is not too much to say that a degree of poverty prevails in the ornamentation of home

grounds that would not be tolerated in the interior furnishing or in the decoration of the house itself.

The appearance of the home grounds carries with it an opinion in accordance with its simplicity, beauty and naturalness, not its expense or artificial arrangement. It should be the aim to have it look homelike, and not try to make a forest or wild garden out of a small backyard.

SELECTION OF GROUNDS

 In the process of establishing a homestead and completing it by working in plants and trees, there are numerous important considerations to be thoroughly studied. The first step in garden-making is the planting plan. This consists of a drawing of the grounds and diagrams showing its contour; it also presents the exact position of beds and specimen trees. It is better to put this part in the hands of an experienced gardener, as a great deal of future happiness depends on the correct placing of the plants.

The subject of paramount importance is the selection of the ground itself. In the majority of cases, practical and essential considerations are overlooked, and one such as beauty of scenery finally determines the selection of the spot. The land should be comparatively level, but one should not try to remove rocks and hills by grading to fix up a selection. This is difficult, as well as hazardous, and leaves a forced note about such place that is bound to mar the quality of the undertaking, be it ever so skillfully executed. The depressions and elevations must be naturally arranged, with room enough for breadth to abide. Tangles should be avoided, as they shut out light and air, and give an expression of too much confinement. They completely hide the house and neutralize that sense of peaceful buoyancy, that comes only with an abundance of open space, sky and air. The frame of the picture, the softening of the angles and bare surfaces of the house may be made delightful on the smallest place by use of moderate-sized trees, shrubs, herbaceous plants and vines.

A matter of great importance is the general character of adjoining property, such as low, marshy places; undrained stables and all kinds of nuisances to the eye, ear or nose. In rural districts, in addition to these, such factors as nearness to schools, churches, railroad stations, cities and good roads are taken into account, but in urban sections, these need not necessarily be considered.

The environment of the neighborhood is a point not to be overlooked, for it is here that personal conveniences assert themselves. It is a good rule to settle among people of your own class

or standing, as they say, so that you may be able to live according to your means. Again, common sense and a general feeling for economy should prompt one to seek home grounds where the conditions readily shape themselves to his financial means.

SELECTION OF SITE OF HOME

As the house is always the chief consideration of the home grounds, its site must be studied from its different aspects and with due regard to its various functions. There are the means of entrance and exit, and the outlook from the various parts of the house. The road and pathway system of the place, and their connection with other buildings and garden, are all important factors in the problem. Distant views must be provided for, as well as connection with attractive surroundings, lawns, groves, water, etc. The situation of the front door is the keynote that should largely determine the proper location of the house, in the general harmony of the place. The road from the street should seek to conceal itself as it approaches the house, and when the building presents itself in full view, such places as kitchen and wood-sheds should be entirely hidden. Prevailing breezes in summer and winter are essential factors that call for attention. However, as the extremes of both heat and cold generally come from the west, provision by means of evergreens, strewn in clusters can be had to secure comfort.

If there are objectionable buildings that cannot be hidden by the main building, lattices should be constructed and allowed to be covered with rapidly growing vines like Virginia creepers, honeysuckles, climbing roses, and the like. Where stables are a part of the buildings, great care should be exercised in locating at a safe distance from them, probably two or three hundred feet away. If necessary, these can also be screened by use of evergreens or climbing vines.

All turf, trees and shrubs, should be made to appear as natural arrangements. This kind of work is not expensive, but is dignified and refined, because it adheres as closely as possible to the original peculiarities of the ground. Simplicity and dignity are the essential features of all good landscape gardening, and from the nature of the planting, variety will be sure to follow with happy effects.

ROADS AND PATHS

There is an apparent difficulty in reconciling the claims of beauty and utility as regards the matter of gravel roads and turf. Each has its advantages and should be given due consideration,

inasmuch as what it found to be sensible, and for the conveniences and genuine artistic simplicity each afford. It is most natural and convenient to follow a straight or slightly curved line to the house, but on places less than an acre, straight paths only should be used. Winding and twisting roads should be avoided in spite of their frequent beauty of line, when one considers that they are likely to prove inconvenient and difficult for the passage of horses and vehicles. However, paths may differ in this respect and may be curved gently, provided some reason for the deviation is made by grouping shrubs or trees in the bends. The consideration of roads and paths is very important. While their general function is convenience, yet they should present beauty, which is synonymous with simplicity and direction. If circumstances allow, it is a good idea to design all curves of roads on different lines of the ellipse and to avoid arcs of circles, because they are difficult to employ in a practical manner. With roads, as in other things in landscape work, it is impossible and equally unwise to attempt to say how every special problem of road arrangement should be treated, for we cannot assume that all conditions are alike. It is safe, however, to say that the width of a road should be minimized as much as possible and that its course should be directly toward a definite goal and move with long, graceful curves. It is evident that ordinary earth roads without a broken stone foundation can never be satisfactory at all times of the year, and great care should be used to keep it in good order by frequent repairing. In the interest of good drainage, the ditches along the sides should always be open and sufficient slope given so as to allow the water to run off freely. Hollows and ruts should be filled in immediately, and a slope made from the center to the sides which should not exceed one foot in twenty.

The best treatment of footpaths will be found in the main, nearly the same as that of roads, though they need not be as thick and solid. Gravel and broken stone are sufficiently dry for walking, and the tone of color of such walks is more agreeable to the eye than that of asphalt or brick. It is generally practiced to lay sods along the border of all walks, as it is not practical to get firm edges by means of grass seed.

The massing of walks and drives is one of the fine arts in landscape decoration. If care and skill are exercised, the interest of the traveler will not be allowed to flag, for at each turn in the road some new beauty will appear. The sense of discovery is an important one to be gratified. The skillful planter realizes this and takes advantage of the curves in the road to shut out for the time being,

those objects of interest and beauty which lie beyond. *Berberries hembergii* is well adapted to this kind of work.

Roads and paths should be given constant attention in order to get full benefit out of them. The prevention of wear and tear is attained to a large degree by immediate repairing, occasional sprinkling with water and frequent rolling to hold firm the cementing quality of the road. This is especially desirable in spring, just after the frost has disappeared from the ground.

LAWNS

With trees, shrubs and bedding-plants, pleasing contrasts can be produced. Each plant or group of plants, has an expression peculiarly its own, and when used with suitable surroundings the effect is pleasing. While each of these plants possess an intrinsic decorative value, this value is enhanced in proportion to the perfection of the greensward in which it is set. A perfect lawn is one of the rarest possessions, either of a public or private establishment.

There are two ways of making a lawn, one is by sodding or turfing, the other by seeding. For small gardens, the former method is undoubtedly the best, while for large areas, seeding is necessarily done, as it generally makes a good lawn and is much cheaper, although more time is needed to bring it to perfection. The earlier the lawn can be seeded, provided the ground is dug enough to work well, the better the results will be. The ground should be permitted to settle during one or two rains after the last grading is done, and then raked lightly before sodding or seeding. If the season is unusually dry, a roller may be substituted with good effect.

In laying the sod, join all edges carefully, and if some portions are thinner than others, place dirt underneath to bring them up even. When the laying is completed, it should be watered, stamped or beaten well and then gone over with a heavy roller.

For seeding the surface should be passed over with a fine tooth rake to mellow the top so as it will be in condition to receive the seed. It is a common and costly error to use grass seed too sparingly, for it is far better to apply four or more bushels to the acre than less. The reason for this is obvious, some of the seed may not have vitality to germinate, or some may be eaten by birds and to re-seed the ground would mean a waste of labor and capital.

As to varieties, where it is known that any one sort does well, it is best to use that kind, but generally, Red Top or Kentucky Blue Grass are preferred, and with these a little white clover is invariably used, for the greenness it maintains during drouths.

FLOWERING AND ORNAMENTAL PLANTS

The effectiveness of hardy perennials or annual flowering plants in the garden depends greatly upon their position and arrangement. In the natural style of garden-making, the front parts of trees and shrubbery borders, as well as in the midst of these, and in the bare spaces are suitable places for flowers of every kind. Bright annuals or low hardy plants that are appropriate for edging, may be placed next to the grass; while in the tops of shrubbery lines, showy hardy plants, bulbs and tender perpetual blooming flowers may be set. There are many small hardy shrubs, as palmias and rhododendrons, that thrive in the shade and these may become naturalized in such places by grouping them around the house where other plants will not grow.

On areas an acre or less, formal gardening is used, *i.e.*, the character of the planting, conforms with the architecture of the building, and beds are set out in geometrical figures. But on larger places the natural style is employed, for it is impossible to maintain lawns, flower beds and terraces on such places, just as it is nonsensical to attempt to make a forest on a plot of an acre.

For pleasing effect, shrubs should be set in groups so arranged as to give a continual succession of blooms, but the general effort of all the plantings should be to avoid scattered and choppy effect. If bright flowers or showy foliage plants are brought together in tasteful designs with regard to harmony and contrasts, they produce most attractive results.

The location of flower beds should always be decided upon with care. It is as necessary to have regard to the ground effect of a bed on the garden, as having it show well on its own account. Avoid planting flower beds in the center of the lawn, as that destroys the most essential feature in a garden, unimpaired breadth and openness of lawn. Place them rather towards the end and sides. It is well when grading the grounds to have slight elevations expressly for accommodating showy flower beds. In this way, a desirable degree of boldness may be secured, while the means by which it was acquired would ordinarily escape detection.

On many estates may be found aquariums, rock-work, pergolas or summer houses, but on small areas these would be out of place. Water gardens, as a rule, are made from natural conditions, possibly where there is a low place, and while they are very attractive, they cannot be employed artificially without incurring a large expense. Pergolas, arbors and summer-houses are more commonly used than aquariums. They furnish delightfully cool spots when

allowed to be covered with climbing vines, such as honeysuckles, American and English ivy, and similar creepers.

Hedges also come in for some consideration. In formal gardening privets are used extensively, though berberry, Japanese quince and mock orange are sometimes substituted. Evergreens are excellent for screening objectionable sights. The advantage in using them, is in that they are not deciduous, thereby being as valuable in winter as in summer. They mat altogether nicely, in a few years, and with proper treatment may be made to last a considerable length of time.

CONCLUSION

It pays to do well whatever is done in ornamental and landscape gardening. It must be borne in mind that quick effect is not essential to a successful home garden. Better wait a few years, and glean the full benefit of your labor than attempt to obtain immediate results by neglecting proper pruning and care.

A good home garden, set out on good landscape principles and given needy and timely treatment, will continue to be a source of much pleasure and comfort for many years. There will always remain something from the original planting, after necessary changes are made that will serve as a landmark, or recall some pleasant thoughts or incident long, long past.

It should be the duty of every possessor of a home to have it surrounded by some trees or shrubs, or perhaps flowers. These producers of natural beauty exert a powerful influence upon human nature. In fact, it is in the manifestation of the ever-changing of the plant, at each season that symbolizes in the human mind the ideas of life in the various stages, as illustrated by the metaphoric use of the words, "spring," "summer," and "autumn," to symbolize the three stages of life. Every leaf, every branch and every flower manifests a type of beauty which art endeavors to approach. After the eye has been trained to see, and the mind to interpret the beauties which the eye beholds, then association with nature produces its greatest effect.

When one assumes this attitude of mind toward the ornamenting of the home grounds, it is wonderful how beautiful and simple and convenient the place will appear after it has had an opportunity to become well established. An interest in the ornamentation of the home grounds would eventually lead to a deep interest

in horticulture and its kindred subjects. In time the effect would be so revolutionary that we might look with sanguine hopes for that day when man would offer his brother man neither bullets nor bayonets, but richer grains, better fruits, and sweeter flowers.

M. MORRIS, '05.

The Science of the Soil

The great majority of people who come in contact with the life in the country, and observe the different operations in the field, barn, dairy and poultry house, are not infrequently impressed with the idea to look upon farming as a mere trade, which like any other trade, through experience and skill in work, enables the farmer to make a decent living from the soil.

While the fact cannot be denied that experience in farm operations and the skillful handling of crops are among the fundamental requisites to successful farming, the recently developed sciences are so closely connected with agriculture that they have begun to revolutionize agriculture wherever they have gained a foothold.

Like the protecting wings of a mighty eagle, agricultural chemistry began to exert a vast and beneficial influence, which even compels the old-fashioned farmer to realize its existence.

From a mere academic science seventy-five years ago agricultural chemistry has developed to such an extent that it now occupies a grand and majestic position, which has enabled it to establish itself in the flesh and blood of agriculture.

The chemistry of the soil, the chemistry of the seedling and the mature plant; the chemistry of the foodstuff in the barn, and the excretions of the animals, also the chemistry of the poultry and dairy products are of such vital importance now to successful agriculture, that the farmer of the future will not lose sight of it. Never before in the history of the development of any profession has science spread so much light in a comparatively short time as chemistry has done to agriculture.

The Roman history tells us that the citizens were divided into classes, and the tiller of the soil belonged to the lower class—the plebeians.

Think of it—the farmer upon whom the life and happiness of every individual, upon whom the existence of institutions of art and learning depended, he who constitutes one of the mighty pillars that makes a government stable and a nation prosperous—that man was considered so low in the Roman Empire as to put a barrier between him and the aristocrat.

Again the learned and higher classes of ancient Greek and Rome have devoted their intellect to the development of æsthetic arts as music, painting and sculpture; they have lifted their imagination to the complexities of metaphysics and philosophy, statesmanship and diplomacy; they also tried to expound the mysteries of the heavens; the strings of their poetic feeling were touched by the beauty and majesty of Mother Nature; the alchemists dreamt of changing one element into another, yet they hardly dreamt that mysteries of nature are also hidden in the soil, mysteries of profound and grand interest to the welfare of mankind.

The tilling of the soil was considered low, and every farmer was looked upon with scorn. With fanatical persistency this scorn was even brought down as late as the sixteenth and seventeenth centuries. At that time the ambition of sovereign and statesmen was to swallow up the weaker and more peaceful nations; to spread and gain in power, to subjugate, and suppress by fire and sword. Hundreds of acres of cultivated land, blooming gardens and fields—the products of years of continuous toil—was ruined in a very short time that the work of human slaughter might be facilitated.

The farmer was the first victim in any political disturbance; not infrequently he was robbed and skinned by the government and politician, his last sheep, horse or cow, was taken away in order that the nobility might pursue their frivolities and extravagant life. The feudal system placed the farmer on an equal basis with his animal.

The farmer who was in closest contact with nature was kept in grossest state of ignorance and superstition.

Is there any wonder that the tiller of the soil did not go any further than to be a mere drudge; and that while the world had been enriched with new discoveries and inventions, the science of the soil had hardly been thought of? Was agriculture to be doomed? Was the scorn and prejudice against farming to remain forever? No! It was destined for science to do away with all that prejudice. It has lifted the curtain which has kept agriculture in darkness for hundreds of years and revealed to the world the mysteries of the soil. Hundreds of agricultural schools, colleges and experiment stations have been established throughout the civilized countries of the world. America takes the leading place in agricultural education. Those schools and colleges are sending out every year young men to spread and popularize the new results and experiments. Bulletins from the experiment stations and farm papers are published every month to teach the farmers better methods and appliances. It was destined for science to reveal before the

world, that the simple and harmless gas nitrogen which characterizes itself by inertness in the air plays the most prominent factor in farm economy: (1) It is nitrogen which is likely to become deficient in the soil; (2) it is nitrogen which combines itself with hydrogen of the plant in the manure pile and goes off in the form of ammonia; (3) it is nitrogen to which we are greatly indebted for the strengthening and building up of our muscular fibers and those of our animals; (4) it is the nitrogenous food which plays such a prominent factor in balancing rations for the best result with our animals; hardly anything will benefit a farmer more than a liberal knowledge of chemistry, although the physics of the soil ought not to be lost sight of. The old times farming must depart to give room for the better and newer one.

Superstition and ignorance on the farm are uprooted like a bad weed.

Truth, education and science are taking their places.

The farmer of the future will cease to consider himself a mere drudge, for he will be a man of scientific, as well as muscular training, a man who will be conscious of his power and importance in society, and to whom the rest of the people will look with pride and respect.

To quote the words of Secretary Wilson, of the Department of Agriculture, "The farmer of the future will be a man of science, a man who doesn't know the science of the soil has no business to go to farming."

VICTOR ANDERSON, '07.

The Cream Separator

One of the best improvements in the dairy industry has been the cream separator.

In previous years, the methods of skimming milk was poor. Also, a proper place to do the skimming.

But when the first centrifugal separator was brought to the United States, from Europe, in 1879, a revolution in the dairy industry resulted. With the old method, a thorough separation was not secured, consequently much less butter was made, as the butter fat went to the calves and pigs as skim milk. For a while, the creamery man ignored the separators. But, at last, they accepted them and a more perfect skimming of the milk resulted. These separators were operated by hand and steam power was used applied by belt, also steam turbine. This was the beginning of progress.

But years later, they introduced a small machine, which was of the same pattern as the first, with a crank operated by hand. This was a machine which any farmer could own and operate as it took up a small space. It then became a matter of economy and necessity to own one.

When these farm separators came on the market, the demand was so great that the companies could not fill the orders quick enough. Now with the introduction of the machine, instead of taking up time to go to creamery for their cream, as it was in the earlier days, they utilized the time and horses for more necessary purposes, on the field. This did not apply to all farmers, as their wives did the separating and churning at home.

The object of a separator is to skim milk by centrifugal force. There are laws in physics that could be brought upon this subject. But it is the intention of the writer to give a brief account of the separator.

To separate milk as it comes from the barn into cream and skim milk. There are not many parts to a separator. The principal parts are the bowl, cream covers and receiving can. The bowl is one of the chief factors of the machine. When first introduced, the bowls were large, cylindrical hollow drums, which were more or less complicated. As the milk flowed into it, there was a remixing of the cream and skim milk, after it had started to separate. This was very bad. One of the separators had discs, and cones, most of them had many complicated devices. But now the best machine is the one with the least.

The machine should be set level and on a good foundation. The bowl revolves at a high speed, 16,000 revolutions in a minute. A trifle offset of the bowl or setting causes a great friction on the bearings and a vibration of the bowl results. This in turn injures the separator and the proper skimming of the milk does not take place. So a uniform motion of the bowl and an even speed should be had to acquire good results.

In buying these cream separators, an instruction book is given, which the buyer should strictly heed. Especially to the named speed and temperature of milk.

The milk should be heated up to 85° at least, and no higher than 90°. If the milk is put in at a lower temperature, it will close the tubes and an imperfect skimming results. If put in at a higher temperature, it somewhat injures the quality of the butter.

On the bowl, there is a screw which regulates the thickness of cream to be separated. A farmer may skim the milk and test his cream or skim milk by the Babcock hand tester or steam turbine.

By this test, he can determine whether his cream is too thick or too thin by the percentage.

It is then entered into a receiving can and from there passes into the bowl. The rate of inflow being regulated by a faucet. The inflow should be of an even flow, not too slow.

As the milk enters the bowl, the operator is turning the crank at the regulated speed. The centrifugal force then separates the milk globules into two parts, butter fat and milk serum. The former being lighter remain towards the center, while the latter, being heavier, is thrown to the outer side. It then passes out into separate spout covers to be received by the milk cans.

After the cream and milk has entered the separate cans, the cream is put in a spring-house, where it is kept until needed for the riping process.

The skim milk may be treated the same, but it is of more value, while warm and fresh to feed to the stock. This is one advantage over the old method.

After separating, the machine is let alone until it stops. Then the different parts are taken off and rinsed with cold water first, then with hot water containing soda; thorough rubbing with a brush, steamed and rinsed with warm water. The bowl is washed separately and with care. After this, they are laid upon a table to drain and dry. The machine, likewise, is rinsed with water to wash off any milk on it.

The machine should be well-oiled, and oil-cups are provided for that purpose. The bearings should be coal-oiled every few weeks, so as to keep the parts free from dirt and gummy substance.

To keep a machine in good order it should be covered with a cloth or case, this will protect it from dirt and dust.

The separator acts as a strainer, whereby the milk is strained. It is a great help to the farmers who cater to the city trade, although the milk is not as pure as our city neighbors would like it to be. Hence, the separator does something in regards to purifying the milk. As we know that many of our farmers are not too particular while milking the cows.

There are many patterns of separators, as the De Laval, Sharpless, United States, and others. But in buying one, the person must bear in mind the durability and completeness of separation of the machine, also, simplicity in construction, so that each part may be taken off and cleaned easily.

This is the improvement over the old method of skimming milk and has opened the eyes of our farmers in the dairy business.

CHAS. HORN, '06.

Spring

With the beginning of spring-day
New life comes in me, I feel gay,
Yet there's a longing in my heart
With which I can't easily part.

The sun shines bright, the heart to cheer,
Its golden rays to us are dear,
To them who work in city's dust
From morn till night for money's lust.

Mother Nature herself has dressed
In green color which suits her best,
She looks gay like a virgin queen
With lovely smiles to greet and win.

The choir of singing birds are here;
They come to greet thee, mother dear;
To live and sing in woods and grove,
To fill with songs the air above.

Farmers are busy on their land
To add to Nature's beauty grand;
To plant, to grow their fruits and grain;
To make the world in comfort gain.

Every creature hunts after food,
All in harmony and good mood
The farmer's cows, chickens and sheep
Lay cozily in grass deep.

Spring is here in all its glory,
Let us be gay and stop to worry,
Let us rejoice in Nature's youth,
All sing together man and brute.

V. A., '07.

Agricultural Industry

For a long time the economists of various parts of the world discussed the question as to which of the different industries is worthy of taking first place.

For some time it was maintained that the precious metals, as gold and silver, constituted wealth by their excellence.

The pre-eminence was awarded to nothing else but to auriferous and argentiferous mines. According to those who sustained the mercantile system, there was nothing but commerce which could increase the wealth of a country which has no mines. Soon after this the economists of the eighteenth century endeavored to prove to us that the agricultural products constituted the greatest part of a nation's wealth, as is seen in most of the European countries; among which the country bordered by the Carpathian Mountains, or Sübenbürgjen as they are called in German, take first rank. There 75 per cent. of the people are occupied in agricultural pursuit, and in a short time their little country has grown up to be called the "Modern Kingdom of Roumania "

Now let us observe the agricultural industry, although there are many serious objections to give it first place in the development of humanity.

It is very true, or at least more than doubtful, that agriculture had to be preceded by some of the other industries which must have existed before it, at least in a rudimentary state.

It is a fact that man was hunting, fishing, and in nomadic state before he devoted himself to the art of agriculture. The invention of the pickax and hoe, and later the plow had to precede agriculture.

THE IMPORTANCE OF AGRICULTURE

The question concerning the importance of agricultural products overrules all the other social questions. In the most ancient times agriculture was looked upon as the most solid foundation upon which the greatest economic edifice of nations can be established.

We all know how much the Romans thought of agriculture. Gladly the Romans replaced the bow by the hoe and agricultural work was their recreation. The generals and dictators never thought that they lowered themselves by getting tired behind the plow. From the Romans we have many writings on agriculture, as Verona's, Collumella's and Cicero's, and from these we can see that they considered agriculture a science, whose principle and precepts are worthy of being studied. Their enthusiasm for rural life was so great that their great poet Virgil immortalized it in one of his poems, called "Geogucele." Later on the governments of various countries have tried to encourage agriculture, among which the United States ranks very high.

It is known that agriculture is a benefactor to modern culture. As the immortal French poet Lamartine said: "It is not only wheat and trees that come forth from a harrowed and sowed land but a whole civilization." Agriculture is different from other industries in that we are never afraid of overproduction. The advantage in overproduction being that the necessary food can be obtained at a comparatively low price. When we have an abundance of crops more men are employed in the fields, and these men require manufactured goods, thus wages are raised and the whole world prospers.

VALUE OF SCIENTIFIC AGRICULTURE

The fundamental law of scientific agriculture is to restore to the land what cultivation of plants has made it lose.

A scientific farmer must know which of the organic matters were taken up from the soil by the production of crops; how to restore them and the cheapest method to do so. It is undoubtedly true that if the fertility is not restored to the soil the crop producing power will soon be lowered and finally our lands become but deserts.

History shows us how the most fertile regions of Arabia, Mesopotamia and Sicily are today deserts on account of the ignorance of their former cultivators. Spain, so populated and fertile during the time of the Moors, has become poor and depopulated under Philip II. and after 2000 years of rest the lands which the Etruscans have cultivated are still no more than swamps and parts of deserts.

There are now two ways of restoring the fertility of the soil. First, through the atmospherical agents, and this is done by leaving the land rest. This is done where lands are cheap. Second, by applying different manures. Thus the greatest point in scientific agriculture is to obtain the best crops and at the same time not to exhaust the soil.

In taking up a course in scientific agriculture we also come across a subject called Forestry. This branch of science teaches us the value of forests, which is of great importance. I shall mention here some of the advantages of forests.

Forests break the force of the winds, they preserve certain locations from hail and storm. Forests also keep land from inundations, they also keep up the land by the leaves which fall down every year, and by their deep roots which bind the soil and hold it firm. Hence the abundance of forests is a blessing to the countries which possess them. It is true that in new countries, such as Brazil, United States, etc., the clearing of forests has been a step towards civilization but now enough has been cleared and destroyed, and now some measures ought to be taken to prevent the clearing of forests.

JOSEPH WISEMAN, '07.

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